

### **Radon Passive System Guidelines**

- Before the concrete floor is poured in the basement a permeable layer of gravel (1/4" or larger) needs to be used for the final grading. This will allow the radon to move below the house to a vent pipe. This can also be accomplished by using perforated drain pipe inside the interior of the footer and include a few runs across the middle, if the basement square footage is larger than 1500 sq ft.
- Next the radon pipe (3" or 4" PVC) is installed in location that will allow the pipe run through an interior wall to the roof. The efficiency of the system is greatest if the pipe can be run straight to the roof with no horizontal runs. A "T" fitting is glued on the bottom of the pipe and is inserted in the gravel. If drain tile is used the pipe is fastened to it.
- If a large section of the basement is crawlspace with exposed soil this area will need to be covered with a sturdy 6mil plastic that is sealed to the walls and a pipe inserted also. My experience is that with a small crawlspace or spaces these would only need to be covered and sealed. No pipe is needed.
- Before the concrete is poured a 6mil poly covers the soil or gravel. The poly is overlapped by 12". This not only helps contain the radon but also help keep ground moisture from migrating up into the concrete slab.
- After the floor is poured urethane caulk is used to seal all cracks and expansion joints.
- Where the pipe exits the roof it must be at least 10 feet from any windows that can be opened. The radon pipe needs to be at least 12" above the plane of the roof.
- Finally have the electrician place an outlet in the attic less than 6 feet from the radon pipe. If a fan is needed in the future you are all set to just plug it in.

## **Passive Radon Control System for New Construction**

### **Architectural Drawings of:**

- 1) Passive radon control system**
- 2) Crawlspace radon control system**
- 3) Additional fan for active system**

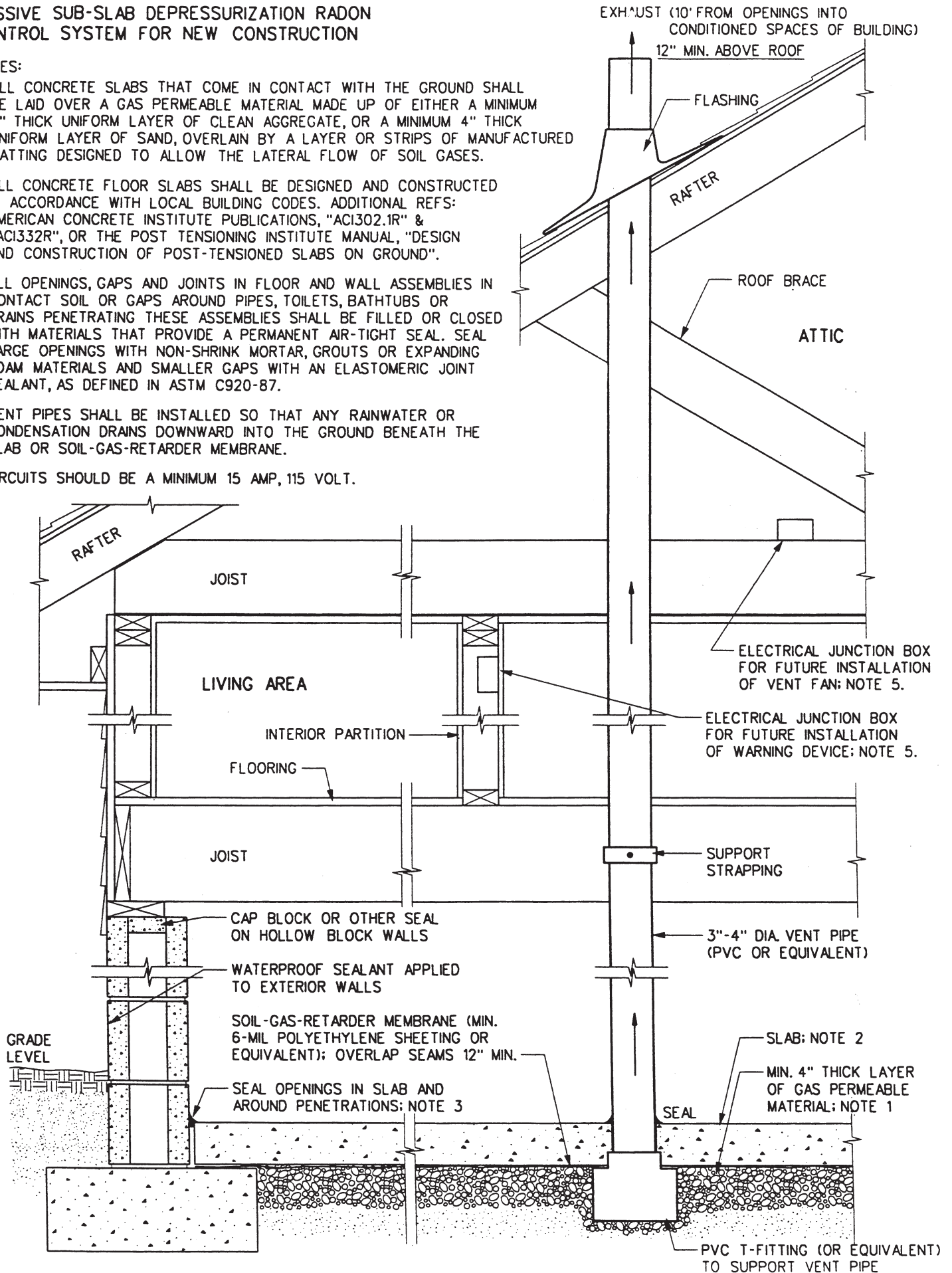
### **for one and two -family dwellings**

These architectural drawings are intended for use by architects, home builders, designers, radon mitigators and others interested in the installation of passive radon control systems in one and two -family dwellings. For more information on radon and radon-resistant new construction call 1-800-55RADON or see the EPA web page:  
[www.epa.gov/iaq](http://www.epa.gov/iaq)

# PASSIVE SUB-SLAB DEPRESSURIZATION RADON CONTROL SYSTEM FOR NEW CONSTRUCTION

## NOTES:

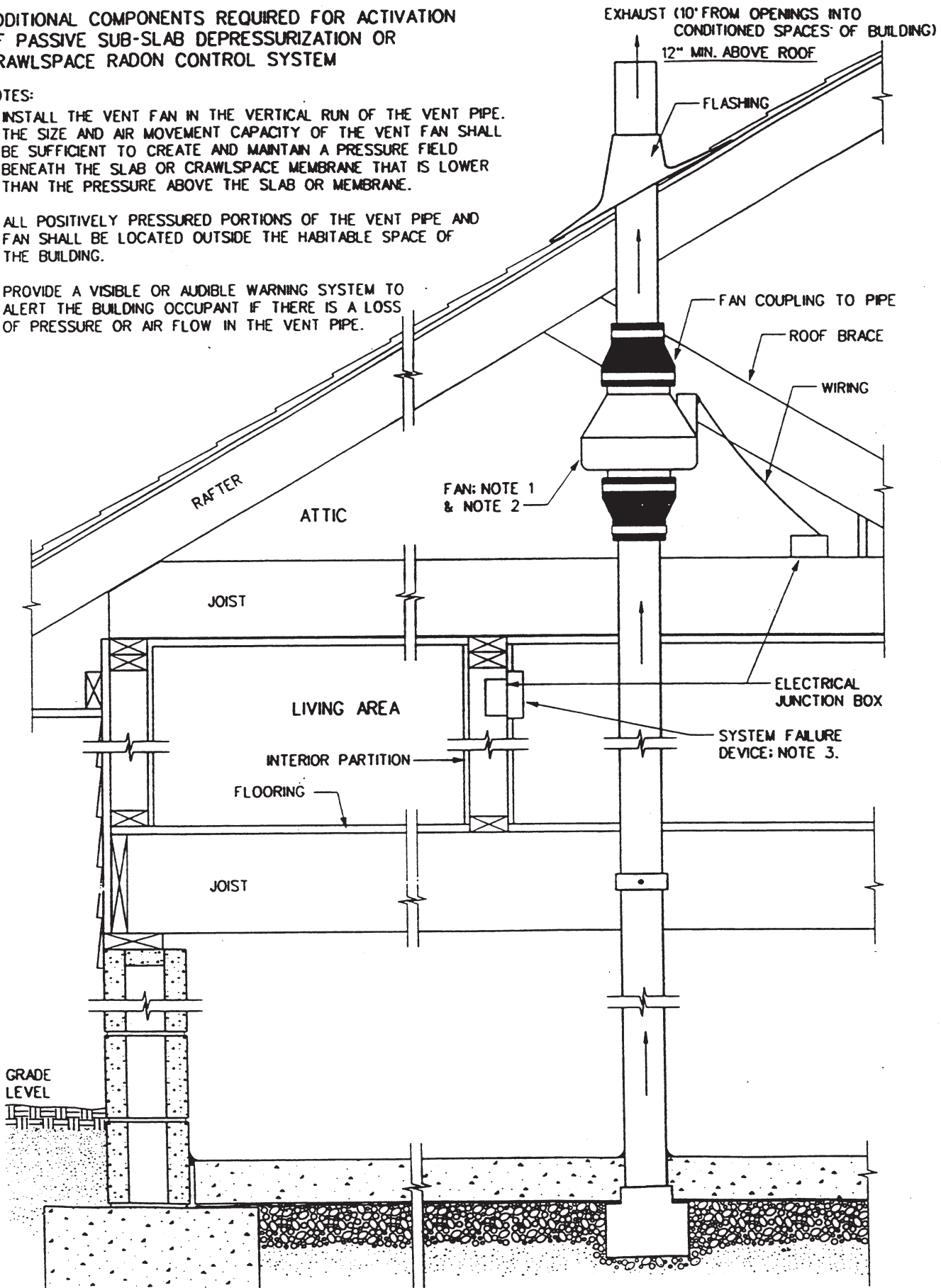
1. ALL CONCRETE SLABS THAT COME IN CONTACT WITH THE GROUND SHALL BE LAID OVER A GAS PERMEABLE MATERIAL MADE UP OF EITHER A MINIMUM 4" THICK UNIFORM LAYER OF CLEAN AGGREGATE, OR A MINIMUM 4" THICK UNIFORM LAYER OF SAND, OVERLAIN BY A LAYER OR STRIPS OF MANUFACTURED MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.
2. ALL CONCRETE FLOOR SLABS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL BUILDING CODES. ADDITIONAL REFS: AMERICAN CONCRETE INSTITUTE PUBLICATIONS, "ACI302.1R" & "ACI332R", OR THE POST TENSIONING INSTITUTE MANUAL, "DESIGN AND CONSTRUCTION OF POST-TENSIONED SLABS ON GROUND".
3. ALL OPENINGS, GAPS AND JOINTS IN FLOOR AND WALL ASSEMBLIES IN CONTACT SOIL OR GAPS AROUND PIPES, TOILETS, BATHTUBS OR DRAINS PENETRATING THESE ASSEMBLIES SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIR-TIGHT SEAL. SEAL LARGE OPENINGS WITH NON-SHRINK MORTAR, GROUTS OR EXPANDING FOAM MATERIALS AND SMALLER GAPS WITH AN ELASTOMERIC JOINT SEALANT, AS DEFINED IN ASTM C920-87.
4. VENT PIPES SHALL BE INSTALLED SO THAT ANY RAINWATER OR CONDENSATION DRAINS DOWNWARD INTO THE GROUND BENEATH THE SLAB OR SOIL-GAS-RETARDER MEMBRANE.
5. CIRCUITS SHOULD BE A MINIMUM 15 AMP, 115 VOLT.



# ADDITIONAL COMPONENTS REQUIRED FOR ACTIVATION OF PASSIVE SUB-SLAB DEPRESSURIZATION OR CRAWLSPACE RADON CONTROL SYSTEM

## NOTES:

1. INSTALL THE VENT FAN IN THE VERTICAL RUN OF THE VENT PIPE. THE SIZE AND AIR MOVEMENT CAPACITY OF THE VENT FAN SHALL BE SUFFICIENT TO CREATE AND MAINTAIN A PRESSURE FIELD BENEATH THE SLAB OR CRAWLSPACE MEMBRANE THAT IS LOWER THAN THE PRESSURE ABOVE THE SLAB OR MEMBRANE.
2. ALL POSITIVELY PRESSURED PORTIONS OF THE VENT PIPE AND FAN SHALL BE LOCATED OUTSIDE THE HABITABLE SPACE OF THE BUILDING.
3. PROVIDE A VISIBLE OR AUDIBLE WARNING SYSTEM TO ALERT THE BUILDING OCCUPANT IF THERE IS A LOSS OF PRESSURE OR AIR FLOW IN THE VENT PIPE.



# PASSIVE RADON CONTROL SYSTEM IN CRAWL SPACE FOR NEW CONSTRUCTION

## NOTES:

1. INSTALL A LENGTH OF 3" OR 4" DIAMETER PERFORATED DRAIN TILE HORIZONTALLY BENEATH THE SHEETING AND CONNECT TO THE "T" FITTING WITH THE VERTICAL STANDPIPE THROUGH THE SOIL-GAS-RETARDER MEMBRANE. THIS HORIZONTAL PIPE SHOULD NORMALLY BE PLACED PARALLEL TO THE LONG DIMENSION OF THE HOUSE AND SHOULD EXTEND NO CLOSER THAN 6 FEET TO THE FOUNDATION WALL.
2. VENTILATE CRAWLSPACES IN CONFORMANCE WITH LOCAL CODES; VENTS SHALL BE OPEN TO THE EXTERIOR AND BE OF NONCLOSEABLE DESIGN.
3. CIRCUITS SHOULD BE A MINIMUM 15 AMP, 115 VOLT.

